

**UMBRELLA WITH LAMPS MOUNTED DETACHABLY WITHIN HOLES IN  
COVER SUPPORT RIBS**

**BACKGROUND OF THE INVENTION**

**1. Field of the Invention**

5        This invention relates to an umbrella, and more particularly to an umbrella that includes a plurality of lamps mounted respectively and detachably within a plurality of holes in cover support ribs.

**2. Description of the Related Art**

10        Sometimes, a plurality of lamps are mounted detachably on a conventional garden umbrella for purpose of decoration or illumination. However, the lamps are exposed outwardly of the pole and ribs of the conventional garden umbrella, and are likely to be damaged. Furthermore, it is difficult  
15        to open and close the conventional garden umbrella due to the presence of the lamps.

**SUMMARY OF THE INVENTION**

      The object of this invention is to provide an umbrella that includes a plurality of lamps mounted respectively  
20        and detachably within holes in cover support ribs of the umbrella so that they will not be damaged easily and so that the umbrella can be opened and closed easily.

      According to this invention, an umbrella includes a pole with an axially extending wire hole, a cover, and a  
25        plurality of cover support ribs, each of which is formed with a plurality of lamp holes, within each of which a lamp is mounted detachably. A main wire member extends through

the wire hole in the pole. A plurality of branch wire members connect the lamps respectively and electrically to the main wire member. Each of the branch wire members is disposed between the cover and a corresponding one of the cover support ribs.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

These and other features and advantages of this invention will become apparent in the following detailed description of the preferred embodiments of this invention, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of the first preferred embodiment of an umbrella according to this invention;

Fig. 2 is a schematic side view of the first preferred embodiment;

Fig. 3 is a fragmentary sectional view of a pole of the first preferred embodiment;

Fig. 4 is a fragmentary perspective view of a branch wire member, a retainer, and a cover support rib of the first preferred embodiment;

Fig. 5 is a fragmentary exploded view of the branch wire member, the retainer, and the cover support rib of the first preferred embodiment;

Fig. 6 is a fragmentary sectional view of the branch wire member, the retainer, and the cover support rib of the first preferred embodiment;

Fig. 7 is a perspective view of a retainer of the second preferred embodiment of an umbrella according to this

invention; and

Fig. 8 is a fragmentary sectional view of the retainer and a cover support rib of the second preferred embodiment.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 Referring to Figs. 1 and 2, the preferred embodiment of an umbrella according to this invention is shown to include an upright pole 1, a cover 2, a hub 3, a plurality of cover support ribs 4, a runner 5, a plurality of stretcher ribs 6, a plurality of lamps 7 (see Figs. 5 and 6), a main  
10 wire member 8, and a plurality of branch wire members 9.

The pole 1 is formed with an axially extending wire hole 11 (see Fig. 3) having an open upper end formed in an upper end surface of the pole 1, and a wire inlet 12 formed in a lower portion of the pole 1 and communicated with a lower  
15 end of the wire hole 11. The hub 3 is coupled to an upper end of the pole 1.

Referring to Figs. 1, 2, 4, 5, and 6, each of the cover support ribs 4 has an inner end connected pivotally to the pole 1 in a known manner, a top surface 41 fastened to and  
20 supporting the cover 2 thereon, a bottom surface 42 opposite to the top surface 41, and a lamp hole 43 having an upper end that is formed in the top surface 41, and a lower end that is formed in the bottom surface 42.

The runner 5 is sleeved movably on the pole 1 in a known  
25 manner.

The stretcher ribs 6 have inner ends connected pivotally to the runner 5, and outer ends connected respectively and

pivotally to the cover support ribs 4.

The lamps 7 are configured as bulbs or light-emitting diodes, and are mounted respectively and detachably within the lamp holes 43 in the cover support ribs 4 for purpose  
5 of decoration or illumination.

The main wire member 8 extends through the wire hole 11 and the wire inlet 12 in the pole 1.

The branch wire members 9 are connected respectively and electrically to the lamps 7, and are connected  
10 electrically to the main wire member 8, e.g. in parallel or in series. Preferably, the branch wire members 9 are connected electrically to the main wire member 8 in parallel. As such, when one of the lamps 7 malfunctions, the remaining lamps 7 can still be lit up. Each of the branch wire members  
15 9 is disposed between the cover 2 and the corresponding cover support rib 4. When the umbrella is in a spread-out position, the cover support ribs 4 are fastened to and abut against the cover 2 so that the branch wire members 9 are clamped between the cover 2 and the cover support ribs 4.

To mount the lamps 7 detachably within the lamp holes  
20 43 in the cover support ribs 4, a plurality of retainers 71 are mounted respectively within the lamp holes 43 in the cover support ribs 4, and are disposed respectively around the lamps 7. Each of the retainers 71 includes an  
25 annular reflector shield 72 and two barb-shaped flexible retaining arms 73.

Figs. 4, 5, and 6 show an assembly of one cover support

rib 4, one branch wire member 9, one lamp 7, and one retainer 71, and illustrate how the lamp 7 is mounted detachably within one lamp hole 43 in the cover support rib 4 by the retainer 71. The lamp hole 43 in the cover support rib 4 has a small-diameter upper hole portion 44 and a large-diameter lower hole portion 45 that has an upper end connected to a lower end of the upper hole portion 44 and that has a diameter which is larger than that of the upper hole portion 44. The reflector shield 72 of the retainer 71 is mounted within the lower hole portion 45 of the lamp hole 43 in the cover support rib 4, is disposed around the lamp 7, is shaped as a truncated cone, and has a diameter that increases downwardly. As such, the retainer 71 is used not only as the support base for the lamp 7, but is also used to increase the brightness of light underneath the cover 2 (see Fig. 1). The bottom end of the reflector shield 72 of the retainer 71 has a diameter which is slightly larger than that of a lower end of the lamp hole 43 in the cover support rib 4 so as to prevent the bottom end of the reflector shield 72 of the retainer 71 from moving into the lamp hole 43 in the cover support rib 4. Each of the retaining arms 73 has an upright arm portion 74 formed integrally with the reflector shield 72 at a lower end thereof, and a retaining portion 75 that extends integrally and laterally from an upper end of the upright arm portion 74 and that abuts against the top surface 41 of the cover support rib 4 so as to prevent the retaining portion 75

from moving into the lamp hole 43 in the cover support rib 4. The retaining portions 75 of the retaining arms 73 of the retainer 71 extend away from each other, and can be moved forcibly toward each other so as to permit the retaining portions 75 of the retaining arms 73 of the retainer 71 to be pushed into and through the lamp hole 43 in the cover support rib 4, thereby removing the retainer 71 from the lamp hole 43 in the cover support rib 4.

The shapes of the reflector shields 72 of the lamps 7 and the lamp holes 43 in the cover support ribs 4 can be modified. Figs. 7 and 8 show a modified reflector shield 72' of a retainer 71' and a modified lamp hole 43' in a cover support rib 4'. The lamp hole 43' in the cover support rib 4' is cylindrical. The reflector shield 72' is formed with a cylindrical shield portion 76 that has open upper and lower ends and that is disposed within the lamp hole 43' in the cover support rib 4', and a flange 77 that extends integrally, radially, and outwardly from a lower end of the cylindrical shield portion 76 and that has a top surface which abuts against a bottom surface 42' of the cover support rib 4' so as to prevent the flange 77 from moving into the lamp hole 43' in the cover support rib 4'.

With this invention thus explained, it is apparent that numerous modifications and variations can be made without departing from the scope and spirit of this invention. It is therefore intended that this invention be limited only as indicated by the appended claims.